

Preface to the Proceedings of the Workshop “Heterogeneous Catalysis in Organic Reactions”

Catalytic technologies are highly pervasive spanning a wide range of business sectors such as oil refining, petrochemicals, food industry, transportation and environmental related industries. In these businesses the application of catalysis is, generally, quite well established and technological improvements, although important, tend to be incremental rather than step-out in nature.

In other business sectors, however, such as the pharmaceutical and fine chemical industries catalysis is very much an emerging technology where the disciplines and skills are relatively new and in some cases absent. A number of factors such as environmental concerns, manufacturing cost control and the shift towards chiral drugs have attracted the attention of these industries to catalytic technologies.

The replacement of stoichiometric process steps with catalytic routes offers significant potential benefits in terms of both cost and environmental impact. Chiral catalysis, although very much in an embryonic phase of development offers considerable potential to manufacture enantiomeric products at reduced cost compared to conventional synthesis followed by racemic separation.

Thus, the recent workshop on “Heterogeneous Catalysis in Organic Reactions”, which was held prior to the “11th International Congress on Catalysis” in Baltimore, was both important and timely. The topics covered were quite diverse including zeolites, oxidation catalysis, reactor design, selective hydrogenation

catalysts and chiral catalysis. The Workshop contribution entitled “Kinetic Influences on Enantioselectivity in Asymmetric Catalytic Hydrogenation” has been published previously and may be found in a Special Issue of the Journal of Molecular Catalysis devoted to the Proceedings of the 1996 Francqui Colloquium on Molecular Aspects of Heterogeneous Catalysis (J. Mol. Catal. A, 115 (1997) 495).

The application of catalytic technologies in the pharmaceutical and fine chemical industries will be challenging and exciting, since the range of organic reaction types is very diverse and the skills required to solve the problems are often quite broad. Thus, success in this field will likely depend on how well the industry can bring together multi-skill teams internally and interface externally with, for example, academia to import specialist knowledge.

Companies which embrace this concept and develop multi-skill catalysis application teams will likely be successful in reducing both manufacturing costs and environmental impact of their processes. Thus, although there is much to be done, there is good reason to believe that catalysis has indeed a bright future as an emerging technology in the pharmaceutical and fine chemical industries.

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